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Spring - back of thick curved uni-directional carbon fibre reinforced composite laminate for aircraft structure application (Article)

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Abstract

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Spring-back phenomena of a CFRP part takes place after it has gone through a high temperature cure cycle inside an autoclave. These phenomena have caused quality concerns for aerospace part manufacturers due to the part being out-of-tolerance for surface profile. This paper presents the results of the measurement and analysis of thick curved laminates, which are representative of the actual aircraft parts such as the main ribs of an outboard flap. It is a continuation from the previous work with results for flat uni-directional laminates. Curved laminates with sizes of 300mm, 400mm, and 500mm, corner angles of 30°, 45°, and 90°, and thicknesses of 20, 24, and 28 layers were manufactured. The spring-back effect was measured using a 3D scanner to obtain accurate measurements. Within the range of specimen studied in this work, the spring-back value increases with an increment in size. However, for the remaining two factors (thickness and corner angle), the value decreases. © BEIESP.

SciVal Topic Prominence

Topic: Curing | Composite materials | cure cycle

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